

Claims:

- sub 3* 1. A method for depositing a semiconductor layer, which is a selective deposition wherein after a mask having an opening is formed by using a material including an element which makes a semiconductor layer into a first conductivity type, at least one semiconductor layer of a second conductivity type is selectively grown in said opening at a growth temperature which is higher than a temperature where the material of said mask is decomposed, a portion of constituent elements of said material of said mask being the same as a portion of constituent elements of said semiconductor layer.
2. A method for depositing a semiconductor layer, claimed in Claim 1 wherein said semiconductor layer is a nitride-based semiconductor layer, and wherein the method is a selective deposition in which after a mask having an opening is formed by using a material including an element which makes said nitride-based semiconductor layer into a first conductivity type, at least one nitride-based semiconductor layer of a second conductivity type is selectively grown in said opening at a growth temperature which is higher than a temperature where the material of said mask is decomposed, a portion of constituent elements of said material of said mask being the same as a portion of constituent elements of said nitride-based semiconductor layer.
3. A method for depositing a semiconductor layer, claimed in Claim 2 wherein after a mask having an opening is formed by using a material including an element which makes said nitride-based semiconductor layer into an n type, at least one p-type nitride-based semiconductor layer is

selectively grown in said opening at a growth temperature which is higher than a temperature where the material of said mask is decomposed, said material of said mask including nitrogen.

5 4. A method for depositing a semiconductor layer, claimed in Claim 2 wherein after a mask having an opening is formed by using a material including an element which makes said nitride-based semiconductor layer into an n type, at least one p-type nitride-based semiconductor layer is selectively grown in said opening at a growth temperature which is higher
10 than a temperature where the material of said mask is decomposed, said material of said mask being silicon nitride.

5. A semiconductor layer formed by a selective deposition wherein after a mask having an opening is formed by using a material including an
15 element which makes a semiconductor layer into a first conductivity type, at least one semiconductor layer of a second conductivity type is selectively grown in said opening at a growth temperature which is higher than a temperature where the material of said mask is decomposed, a portion of constituent elements of said material of said mask being the
20 same as a portion of constituent elements of said semiconductor layer.

6. A semiconductor layer formed by the selective deposition, claimed in Claim 5 wherein said semiconductor layer is a nitride-based semiconductor layer, and wherein after a mask having an opening is
25 formed by using a material including an element which makes said nitride-based semiconductor layer into a first conductivity type, at least one nitride-based semiconductor layer of a second conductivity type is

selectively grown in said opening at a growth temperature which is higher than a temperature where the material of said mask is decomposed, a portion of constituent elements of said material of said mask being the same as a portion of constituent elements of said nitride-based semiconductor layer.

7. A semiconductor layer formed by the selective deposition, claimed in Claim 6 wherein after a mask having an opening is formed by using a material including an element which makes said nitride-based semiconductor layer into an n type, a p-type nitride-based semiconductor layers is selectively grown in said opening at a growth temperature which is higher than a temperature where the material of said mask is decomposed, said material of said mask including nitrogen.

8. A semiconductor layer formed by the selective deposition, claimed in Claim 6 wherein after a mask having an opening is formed by using a material including an element which makes said nitride-based semiconductor layer into an n type, a p-type nitride-based semiconductor layers is selectively grown in said opening at a growth temperature which is higher than a temperature where the material of said mask is decomposed, said material of said mask being silicon nitride.

9. A method for fabricating a nitride-based semiconductor light emitting device, including forming a mask by a material including nitrogen as a constituent element, and selectively crystal-growing at least one nitride-based semiconductor layer in an opening of said mask, so as to

form at least one of a current narrowing structure and a structure confining a light in a horizontal direction in parallel to a substrate.

10. A method for fabricating a nitride-based semiconductor light emitting device, claimed in Claim 9 wherein said material including nitrogen as the constituent element is silicon nitride.

11. A method for fabricating a nitride-based semiconductor light emitting device, claimed in Claim 10 wherein the coverage of said mask is not greater than 50%.

12. A method for fabricating a nitride-based semiconductor light emitting device, claimed in Claim 9, including the step of forming on the substrate at least one layer including at least a nitride-based semiconductor layer of a first conductivity type, at least one nitride-based semiconductor layer including at least an active layer, and at least one nitride-based semiconductor layer including at least a semiconductor layer of a second conductivity type, the step of forming a mask having a stripe-shaped opening by a material including nitrogen as a constituent element, and the step of forming, in the opening of said mask, at least one nitride-based semiconductor layer including at least a nitride-based semiconductor layer of the second conductivity type.

13. A method for fabricating a nitride-based semiconductor light emitting device, claimed in Claim 12 wherein said material including nitrogen as the constituent element is silicon nitride.

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14. A method for fabricating a nitride-based semiconductor light emitting device, claimed in Claim 13 wherein the coverage of said mask is not greater than 50%.

5 15. A method for fabricating a nitride-based semiconductor light emitting device, claimed in Claim 9, including the step of forming on the substrate at least one layer including at least a nitride-based semiconductor layer of a first conductivity type, at least one nitride-based semiconductor layer including at least an active layer, and at least one
10 nitride-based semiconductor layer including at least a nitride-based semiconductor layer of a second conductivity type, the step of forming a mask having a stripe-shaped opening by a material including nitrogen as a constituent element, and the step of selectively crystal-growing, in the opening of said mask, at least one nitride-based semiconductor layer
15 including at least a nitride-based semiconductor layer of the second conductivity type, so as to form at least one of the current narrowing structure and the structure confining a light in a horizontal direction in parallel to a substrate.

20 16. A method for fabricating a nitride-based semiconductor light emitting device, claimed in Claim 15 wherein said material including nitrogen as the constituent element is silicon nitride.

17. A method for fabricating a nitride-based semiconductor light
25 emitting device, claimed in Claim 16 wherein the coverage of said mask is not greater than 50%.

18. A nitride-based semiconductor light emitting device, including a mask formed of a material including nitrogen as a constituent element, and at least one of a current narrowing structure and a structure confining a light in a horizontal direction in parallel to a substrate, formed by selectively crystal-growing at least one nitride-based semiconductor layer in an opening of said mask.
19. A nitride-based semiconductor light emitting device, claimed in Claim 18 wherein said material including nitrogen as the constituent element is silicon nitride.
- (20.) A method nitride-based semiconductor light emitting device, claimed in Claim 19 wherein the coverage of said mask is not greater than 50%.
21. A nitride-based semiconductor light emitting device, claimed in Claim 18, including at least one nitride-based semiconductor layer including at least a nitride-based semiconductor layer of a first conductivity type, at least one nitride-based semiconductor layer including at least an active layer, at least one layer including at least a nitride-based semiconductor layer of a second conductivity type, a mask having a stripe-shaped opening formed by a material including nitrogen as a constituent element, and at least one nitride-based semiconductor layer selectively crystal-grown in the opening of said mask and including at least a nitride-based semiconductor layer of the second conductivity type, the layers being formed on the substrate in order.

22. A nitride-based semiconductor light emitting device, claimed in Claim 21 wherein said material including nitrogen as the constituent element is silicon nitride.

5 23. A nitride-based semiconductor light emitting device, claimed in Claim 22 wherein the coverage of said mask is not greater than 50%.

24. A nitride-based semiconductor light emitting device, claimed in Claim 9, including at least one layer including at least a nitride-based
10 semiconductor layer of a first conductivity type, at least one nitride-based semiconductor layer including at least an active layer, at least one nitride-based semiconductor layer including at least a nitride-based semiconductor layer of a second conductivity type, a mask having a stripe-shaped opening formed by a material including nitrogen as a
15 constituent element, and at least one nitride-based semiconductor layer selectively crystal-grown in the opening of said mask and including at least a nitride-based semiconductor layer of the second conductivity type, thereby to form at least one of the current narrowing structure and the structure confining the light in the horizontal direction in parallel to the
20 substrate.

25. A nitride-based semiconductor light emitting device, claimed in Claim 24 wherein said material including nitrogen as the constituent element is silicon nitride.

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26. A nitride-based semiconductor light emitting device, claimed in Claim 25 wherein the coverage of said mask is not greater than 50%.